RECOMMENDED ARCHITECTURE SPECIFICATIONS

for the

MODERN DEFENSE CIVILIAN PERSONNEL DATA SYSTEM (DCPDS)

April 21, 1999

1. PURPOSE

The following are updated architecture specifications (i.e., recommended hardware configurations and associated software requirements for both servers and personal computers) for the modern Defense Civilian Personnel Data System (DCPDS). These are minimum configurations for DCPDS, but have adequate expansion/upgrade capacity to allow customers to adjust processors, memory and disk for additional personnel applications.

2. TIME FRAME

This list is intended for systems purchased/upgraded in FY 00/01 with delivery no sooner than the first calendar quarter of 2000. DCPDS will most likely move to a web-based architecture after full deployment is completed, necessitating a new layer to the architecture--web application servers collocated with the Regional database servers.

3. UPGRADE PATHS

The basic recommendation is for customers to move to the Hewlett Packard (HP) L-class (Rhapsody) and N-class (Prelude) servers. These have clear upgrade paths to both new generations of PA-RISC processors and the jointly developed HP/Intel IA-64 "Merced" processor, available in mid-2000. The Merced can run either Windows NT or HP-UX 11.x. The Rhapsody and Prelude servers require HP-UX 11.0 or higher, so purchases should be synchronized with CPMS's migration to that version. Customers who must field prior to the migration will have to purchase the equivalent systems listed below. We expect HP to merge their product lines on the IA-64 instruction set by 2003. The HP V-class systems do not provide an upgrade path to the Merced and will probably not be upgradeable past the PA-8600 RISC processor planned for 2000. Extreme high-end customers who may wish to aggregate Regional

servers and multiple CSUs on a single machine should consider HP's "SuperDome" class of server, available in 2000.

4. SERVER CONFIGURATIONS

The following configurations update the CPMS guidelines "X-Terminal Emulator Server Configurations for Regional Centers and CSUs." Equivalent HP D/K class machines are provided for the Rhapsody and Prelude servers:

Base Level Configuration (Single CSU) – 20 Users HP Rhapsody[1]/HP D220 256 Mbyte RAM 4 Gbyte Disk drive (2 ea.)[2] 4 Gbyte DAT drive CD-ROM drive System Console HP-UX media HP-UX license Glance Plus Media backup solution[3]
Medium Configuration #1 (Small Region) – 64 Users HP Rhapsody[1]/HP D370 512 Mbyte RAM[4] 4 Gbyte Disk drive (5 ea.)[2] 4 Gbyte DAT drive CD-ROM drive System Console HP-UX media HP-UX license Glance Plus Media backup solution[3]

Medium Configuration #2 (Medium Region) – 128 Users
HP Rhapsody[1]/HP D370
640 Mbyte RAM
4 Gbyte Disk drive (8 ea.)[2]
Disk expansion cabinet
Additional disk controller[5]
4 Gbyte DAT drive
CD-ROM drive
System Console
HP-UX media
HP-UX license
Glance Plus
Media backup solution[3]

Medium Configuration #3 (Large Region) – 200 Users[6]
HP Rhapsody[1] (2 Processors)/HP D370 (2 Processors)
1024 Mbyte RAM
4 Gbyte Disk drive (10 ea.)[2]
Disk expansion cabinet
Additional disk controller (2 ea.)[5]
4 Gbyte DAT drive
CD-ROM drive
System Console
HP-UX media
HP-UX license
Glance Plus
Media backup solution[3]

High-end Configuration (Mega-Region) - 400 Users
HP N4000 "Prelude" (2 360-MHz Processors) [1]/HP K460 (4 processor)
Processor support module
2048 Mbyte RAM
9 Gbyte Disk drive (2 ea.)
Cabinet
Cabinet extension kit
Rear door
Rack installation kit
4 Gbyte Disk drive (12 ea.)[2]
Additional disk cabinet
Additional disk controller (2 ea.)[5]
4 Gbyte DAT drive
CD-ROM drive
System Console
HP-UX media
HP-UX license
Glance Plus
Media backup solution[3]

[1] Requires upgrading to HP-UX 11.0.
[2] The number of drives and total drive space are separate minimums. Do not consolidate this requirement into fewer, bigger drives.
[3] The local media backup solution should be compatible with Oracle's backup utilities. Omniback and Legato are good examples of integrated solutions.
[4] Oracle HR requires a large amount of fixed memory that does not vary with the number of users. Therefore a 64-user system requires a relatively large amount of RAM when compared to the larger systems.
[5] For best performance, keep the number of disks per controller channel at 4 or less.
[6] A region near the 200 User limit should consider a small N-class server or K 570 for expandability.

Web Application Server

Intel-based NT server configuration[7]
One 300-MHz CPU per 20 users
8-12 Mbytes RAM per concurrent user

Sun Solaris server configuration[7]
One 300-MHz CPU per 40 users
6-10 Mbytes RAM per connected user

HP K570 server configuration[8]
One 200-MHz CPU per 70-75 users
8 Mbytes RAM per connected user
100BaseT connection to database server (min.)

[7] No information available on benchmark configuration.

[8] In a benchmarking survey in Sweden, six HP K570 web application servers each configured with 6 PA-8200 processors, 4 Gbytes RAM and 16 Gbytes disk successfully served 3000 simulated concurrent users, providing average response times <3 seconds over a LAN. The database server was an HP V2250 with 16 240-MHz CPU's, 16 Gbytes RAM, and a 1.7 Tbyte EMC disk array. The applications servers and database server were connected by two100 BaseT segments. The transaction mix was 80% query/20% insert. The load was generated from a complex customer developed form (367 forms per hour), a simple customer developed form (26,100 forms per hour), and an Oracle Financials form (9,000 forms per hour). Application servers ran HP-UX 10.2, Oracle Web Application Server 3.0, Oracle Applications 10.7 NCA, Developer 2000 Forms Server 1.6 and SQL*Net version 2.3. The database server ran HP-UX 11.0, Oracle Server Enterprise Edition 8.0.3, and Oracle Applications 10.7 with NCA updates.

5. PC CONFIGURATIONS

The following configurations update the CPMS guidelines "Standard PC Configuration for DoD." PCs purchased from the old guidelines are still adequate to support the modernized system. These configurations represent systems more typical for today's market and were extracted from the IT2-BPA Contract:

Mid-range

Contract #Gateway 2000, Inc.-F01620-99-A-8004

Desktop Configuration A

GP6400
400 Pentium II Processor (MHz)
64 MB Memory
512k L2 Cache
13 GB Hard Drive
17" Monitor EV700 (15.9" View/.28 DPI)
16MB AGP Video Interface
13x min/32 max CD ROM
Sound Blaster 64D/Altec GCS 100 speakers, Microphone
3 Com PCI 10 Base T/BNC Combo Ethernet
Win 98 w/ Media
104+ Keyboard
Mouse
3.5" Disk Drive
Office 97 SBE w/ Bookshelf on CD

High-range

Contract #Gateway 2000, Inc.-F01620-99-A-8004

Desktop Configuration B

GP7450
450 Pentium III Processor (MHz)
128 MB Memory
512k L2 Cache
13 GB Hard Drive
17" Monitor EV700 (15.9" View/.28 DPI)
16MB AGP Video Interface
13x min/32 max CD ROM
Sound Blaster 64D/Altec GCS 100 speakers, Microphone
3 Com PCI 10 Base T/BNC Combo Ethernet
Win 98 w/ Media
104+ Keyboard
Mouse
3.5" Disk Drive
Office 97 SBE w/ Bookshelf on CD

Premium

Contract # Dell-F01620-99-A-8005

Processor
Intel Pentium III 450 and 500 MHz
32 KB L1 Cache
512 KB Internal L2 Cache

Chipset
Intel 440BX PCI; PIIX4e with USB support

Memory
100 MHz SDRAM DIMMs
96 MB SDRAM Standard upgradeable to 768 MB SDRAM
Configurations include 96, 128, 256, 384, 512, and 768 MB Non-ECC and ECC DIMM
96 MB min on 450 MHz and 128 MB min on 500 MHz
3 DIMM sockets

Hard Disk Drive
Ultra ATA EIDE 5400 rpm: 12.9, 17.2, and 25.5 GB
Ultra ATA EIDE 7200 rpm: 12.9 and 22.6 GB

Premium, continued

Chassis
Mini-tower with cooling fans for power supply at the rear of chassis.
Bays
External: two 5.25-inch, and three 3.5-inch (Mini-tower),
Internal: two 3.5-inch

Slots
4 PCI
1 PCI/ISA (Shared)

In/Out Ports
2 USB ports
1 serial port
1 parallel port with ECP
2 PS/2 ports

Power Supply
Dell Soft Power 200 watt
Input Voltage: 90 to 135V at 60 Hz; or 180 to 265 V at 50 Hz
Output Wattage: 200W maximum continuous
Output Voltage: 3.3V, 5V, and 12V 5 VFP, -5V, -12V DC
Heat Dissipation: 180 BTU/hour (minimum value)
Power Management: APM 1.1 hard disk spin down and monitor control
Backup Battery: 3.0 V CR2032 lithium magnesium oxide coin cell

Bios
Phoenix BIOS; 4 MBit Flash

Monitors
Choose from:
UltraScan® 1600HS
UltraScan P990
UltraScan 1000HS
Dell M1110
Dell 1200HS
Dell M780
Dell 1500FP

Sound Card
Choose from:
Integrated Yamaha XG 64 Voice Wavetable Sound
Turtle Beach Montego A3D™ 64 Voice Sound Card
Turtle Beach Montego II A3D™ 320 Voice Sound Card

Premium, continued

Video Card
Choose from:
8 MB ATI Expert 98D AGP graphics card
16 MB STB nVidia TNT 3D AGP graphics card

Floppy Disk Drive
3.5", 1.44 MB floppy disk drive

CD-ROM/DVD-ROM
Choose from:
40x Variable Speed CD-ROM
4.8x[6] DVD-ROM with Software Decoding
4.8x[6] DVD-ROM and Decoder with TV Out

Keyboard
Choose from
QuietKey® Keyboard
Windows Mechanical Keyboard
Microsoft® Natural® Elite Keyboard

Mouse
Choose from:
Microsoft IntelliMouse®
Logitech MouseMan® Wheel (PS/2v)

Operating System
Choose from:
Microsoft Windows® 98
Microsoft Windows NT Workstation 4.0

Bundled Software
Choose from:
Microsoft Works Suite 99 with Money 99 Basic
Microsoft Office 97 Small Business Edition with Encarta 98 and FREE Office 2000 Upgrade in Summer 1999[1]
Microsoft Office 97 Professional Edition and FREE Office 2000 Upgrade in Summer 1999[1]
Microsoft Office 97 Small Business Edition with Bookshelf 99 and FREE Office 2000 Upgrade in Summer 1999[1]
McAfee VirusScan 3.1
30-Day Trial Offer ConnectDirect Internet Access with analog modem purchase

6. UPDATES AND ADDITIONAL INFORMATION

This document, and updates to it, will be maintained on the CPMS Homepage, www.cpms.osd.mil (select Regionalization and Systems Modernization Division → Systems Modernization → Modern DCPDS Architecture Specifications). For additional information, call Brian Brummer (CPMS Reg/Mod) at commercial (210) 652-6500 or DSN 487-6500.